IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patents of J. Austin Kendrick et al.

Patents Nos.: 6,204,344, issued March 20, 2001
6,281,300, issued August 28, 2001
6,319,997, issued November 20, 2001
6,380,325, issued April 30, 2002

For: Continuous Slurry Polymerization Volatile Removal

Hon. Commissioner for Patents
Washington, D.C. 20231

**DECLARATION OF SCOTT T. ROGER**
**FOR SUBMISSION OF PRIOR ART**

Sir:

I, SCOTT T. ROGER, declare that:

1. I am Manager of the Slurry Loop Process Technology Department at ExxonMobil Chemical Company, 12875 Scenic Highway, Baton Rouge, Louisiana, 70807.

2. I am a joint inventor of U.S. Patent Nos. 6,204,344 ("the '344 patent") and 6,319,997 ("the '997 patent"), along with J. Austin Kendrick and Thomas W. Towles. I understand that Mr. Kendrick is the named inventor of U.S. Patent Nos. 6,281,300 ("the '300 patent") and 6,380,325 ("the '325 patent")

3. In 1990, I received a Bachelor of Science degree in Chemical Engineering from Louisiana State University in Baton Rouge, Louisiana.

4. In June 1990, I started working for Paxon Polymer Company at its plant in Baton Rouge, Louisiana. I have worked at this facility since that time, which is now known as the ExxonMobil Chemical Company Baton Rouge Polyolefins Plant

("BRPO"). I have spent more than 13 years of my professional career working on various aspects of slurry loop process operations and development.

5. In this declaration, I will use the term "BRPO" to refer to the plant that is now known as BRPO, regardless of which company owned it at the applicable time. I also will use the term "EMCC" to refer to any company that owned the facility now known as BRPO, regardless of which company owned the facility at the applicable time.

6. From December 1995 to December 1999, I was Supervisor of Production of the Particle Form Manufacturing Department at BRPO. In this position, my primary duties and responsibilities involved the operation of the seven slurry loop reactor systems at the BRPO and supervising the workers who operated those reactors. During this period, I reported initially to Mr. Kendrick and later to Dennis J. Walczak.

7. From December 1999 to June 2002, I was a Staff Engineer in the Slurry Loop Process Technology Department at BRPO.

8. Since June 2002, I have been Manager of the Slurry Loop Process Technology Department at BRPO.

9. Beginning in June 1990 and continuing to the present, I have been involved in operating the slurry loop reactor polymerization processes carried out at BRPO. I am familiar with the technology employed at BRPO in slurry loop reactor olefin polymerization.

10. One of the slurry loop polymerization reactors at BRPO is known as the "D" reactor. EMCC has used D reactor to produce a variety of grades of polyethylene for sale to customers. More specifically, EMCC has used this reactor to polymerize, in a loop reactor, at least one monomer in a liquid diluent to produce a fluid

slurry comprising liquid diluent and solid polymer particles. Essentially all of the polymer produced by D reactor has been sold by EMCC.

11. Before August 1995, slurry was withdrawn from D reactor in a discontinuous manner through the use of settling legs. A single point discharge was put into service on D reactor at BRPO in August 1995. After the single point discharge was put into service, slurry was discharged from D reactor in a continuous manner as polymerization effluent.

12. Before April 1996, D reactor operated with a single, low pressure flash tank that separated liquid diluent from polymer particles in the slurry withdrawn from the reactor. Essentially all of the diluent was vaporized in the low pressure flash tank. The low pressure flash system had a diluent recovery system that compressed, condensed, and purified the recovered diluent vapor before recycling it to the reactor. Starting in April 1996, EMCC undertook a number of modifications to the D reactor system, as described below.

13. In April 1996, a high pressure flash tank was installed in D reactor system to be used eventually with the existing low pressure flash tank as part of a two stage flash system. At that time, diluent recovery equipment — for recovering, condensing, and recycling the diluent separated from the polymer in the high pressure flash tank — had not been installed. During the months that followed, EMCC personnel carried out testing and related work on the high pressure flash tank in an effort to achieve stable, controlled operation of D reactor with the newly installed high pressure flash tank.

14. During the period April 1996 to October 3, 1996, EMCC procured and installed diluent recovery equipment for the D reactor high pressure flash system. The mechanical installation of such equipment was mostly complete by October 3, 1996,

but ongoing testing and related work — including modifications, repairs, and servicing of D reactor and its high pressure flash tank — prevented EMCC from using the diluent recovery equipment at intended levels for one year.

15. Prior to August 1996, D reactor was configured to have four vertical "legs" and an internal volume of 5,300 gallons. In August 1996, D reactor was enlarged and configured to have eight vertical legs and an internal volume of 11,808 gallons.

16. During the period from October 3, 1996, to October 2, 1997, EMCC personnel worked continuously to put into service the high pressure flash system and its associated diluent recovery equipment. The high pressure flash system and diluent recovery equipment became fully operational for the first time on October 2, 1997. Prior to this date, little or none of the effluent that was vaporized in the high pressure flash tank was recovered and condensed without compression by its associated diluent recovery equipment.

17. From October 2 to October 27, 1997, D reactor operated continuously to produce polymer, except for an interruption on October 19 because of reactor fouling. During this period, D reactor produced polymer at a rate of 754,570 to 1,006,758 pounds per day. At that time, D reactor had an internal volume of 11,808 gallons. Accordingly, D reactor operated in the range of 2.7 to 3.6 pounds per gallon per hour during the period October 2-27, 1997.

18. The process used to make polymer during the period October 2-27, 1997, included the following attributes:

19. Ethylene was polymerized in a liquid hydrocarbon diluent in a loop reactor to produce a slurry of polymer solids. The solids concentration in the

polymerization slurry in the reactor was up to 54 weight percent. The reactor was maintained at constant pressure. The total pumping head was greater than or equal to 200 feet.

20. A portion of the slurry was continuously discharged from the loop reactor as polymerization effluent through a discharge valve and into a conduit.

21. The polymerization effluent was continuously fed to a first flash wherein it was flashed to vaporize more than 50% of the diluent to produce concentrated polymer effluent and vaporized liquid. The first flash was operated at about 220 psig. The separation of polymer effluent and vaporized liquid occurred continuously. The vaporized liquid contained some entrained polymer solids that were separated from the vapor in a cyclone.

22. The vapor obtained in the first flash was condensed without compression, by heat exchange with cooling water having a temperature in the range of 70 to 92 degrees F.

23. Polymer solids were continuously discharged from the first flash to a second flash through a seal chamber configured to maintain a volume of polymer solids/slurry in the seal chamber sufficient to maintain a pressure seal. The second flash was operated at about 4 psig. The vaporized liquid contained some entrained polymer solids that were separated from the vapor in a cyclone. The vaporized liquid was condensed by compression.

24. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of

Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the '344, '300, '997, and '325 patents.

Dated: December 9, 2003
Baton Rouge, Louisiana

Scott T. Reger